ABC NEWS - STS-1 LAUNCH (4-12-1981)

https://www.youtube.com/watch?v=MjNWwy99Lss (https://www.youtube.com/watch?v=MjNWwy99Lss)

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From Sunday, April 12th, 1981 ABC NEWS Live coverage of the first space Shuttle Launch with Frank Reynolds, Lynn Sheer, Jules Bergman and Astronaut Gene Cernan

- Coverage runs from 6:50:00 A.M E.T - to about 9:15 A.M E.T, About 10 minutes before the 7:00:03 A.M E.T launch

- Crew: Commander: John Young
  Polit: Bob Crippen

00:00:00 (https://www.youtube.com/watch?v=MjNWwy99Lss)

this is shuttle launch control at t minus nine minutes and holding we are approximately 26 seconds away from picking up the countdown at the t-minus nine minute point nine minutes remaining between now and seven a.m when we expect to have a liftoff of america's first space shuttle uh the launch team has been briefed on the way in which a halt can be called to the countdown during the final nine minutes of the countdown and we're coming out we're at t minus nine minutes and counting [Applause] the launch events are being controlled by the ground launch sequencer now that has been initiated and that will be in control up to t minus 25 seconds when they switch to the onboard redundant set launch sequencer the ground launch sequencer is a part of the launch processing system and operates by relaying commands to the orbiter's onboard computers which then report back to the launch processing system that the can lands have been executed the primary job of the computers is to check that all of the launch commit criteria such as propellant loads temperatures pressures and other measurements are satisfactory all right the countdown clock has started running once again eight minutes and 15 seconds away from the actual uh moment of uh liftoff and we'll be back with our coverage of columbia and the flight today after this message and a word from our local stations

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during the apollo flights each one-piece spacesuit was custom made for an astronaut today's spacesuits are mass-produced two-piece units available in small medium and large [Music] sizes

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live coverage of the space shuttle columbia continues now from the kennedy space center in florida frank reynolds only about five minutes to go a little more than five minutes to go now before ignition and liftoff the swing arm there you see the access arm that has been attached to orbiter has now been withdrawn pulled back look at the view from out of that as it swings back across this is the passageway that the astronauts would have used you see it retreating uh there in the left this is the passageway the astronauts would use in order to get out of the spacecraft uh in the event anything had happened uh up to this time now of course the only way they can go get out in the event of some difficulty is to eject which they can do uh even at this point and that would be the least desirable way for them to abort the mission in any way because of course it would be extremely dangerous extremely dangerous well four minutes and 27 seconds to go before liftoff before the start of this historic mission a mission that has never been flown before they've never used the solid rocket boosters they never before have sent a spacecraft into orbit that is going to come down as a plane landing essentially as a glider a powerless glider look at those huge engines getting ready to receive now the millions and millions of pounds of thrust that will uh catapult this spacecraft and this uh

[00:06:00 (https://www.youtube.com/watch?v=MjNWwy99Lss&t=360s)](https://www.youtube.com/watch?v=MjNWwy99Lss&t=360s)

catapult this spacecraft and this uh really strange assemblage off the uh off the earth we're going to go to lynn shure who is down at the vip section now to tell you a little bit more about what to listen for some of the acronyms that will be used as the launch proceeds lin yes frank i am here at the vip center and right in the shadow of the vab that means i'm with some very important people in the shadow of the vehicle assembly building and it's easy to use these acronyms around here because sometimes it seems as if nasa is just one giant acronym for example here are some of the terms that everyone is going to be hearing in just a few minutes first of all there is srb sep and that's when the two solid rocket boosters will fall away and then you'll hear miko which is main engine cutoff just over eight minutes into the flight and then there's et cep when the external tank emptied of its liquid fuel is jettisoned two acronyms no one here wants to use or wants anyone to hear rtls which has returned to launch site the most dangerous forced landing right here back at kennedy space center and aoa abort once around that's a forced landing after only one orbit around the earth but i must tell you frank no one here at the vip center is saying anything in acronyms right now all they're thinking about is the word liftoff they started to cheer when the clock began again at nine minutes everybody here anxiously hoping waiting watching back to you frank the president's message that uh jules mentioned a moment ago said in part you go forward this morning on a daring enterprise and you carry the hopes and prayers of all americans with you and astronaut john young the commander of the mission replied that's a right fine speech we sure appreciate it all right we have two minutes and 17 16 15 seconds to go to launch jules and jeanne that's it frank looks good that's equipment to go yeah the wider lightroom is back uh the apu the auxiliary power units have started which power the flight surfaces and

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which power the flight surfaces and which controls and unless something catastrophic goes wrong it's a go by the way everything happening now is being done automatically by computers they can be overwritten but the only so many thousands of things are happening all at once gene well it's all in the computer checkout there's too many things uh for any one man or team of men to do we're monitoring effectively in the control center the the computers themselves who are in in turn monitoring all the systems of the boosters in the spacecraft i might add that the president's message was a was a very moving message and believe me at this point in time i can testify by my own personal experience a prayer now and that helps because uh you need all the help you can get on one of these missions it's emotional but precise well there are plenty of prayers being said right now and i'll tell you my i'm getting a few butterflies right now no matter how many times you'll watch these things go boy you've got to realize yeah what it means every time's the first time whether you've been there before or not i don't know godspeed with john and that's going to be a great one water will be armed just a couple seconds from now it has been armed 45 seconds and counting that's a blast of cooling water frank uh that protects the minus sequence or start t minus 20 seconds and counting [Music] t minus 15 14 13 t minus ten nine eight seven six five four we've gone for main engine start we have seen

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go and they're on her back [Music] just parking straight up into the sky what an unbelievable sight i didn't think anything could match an apollo the trail of the fumes you see is from those solid rocket boosters about a minute they're through the maximum uh maximum aerodynamic pressure now to go back to 100 they've actually throttled back a little bit you get through the maximum pressure on the vehicle and now they've gone back to full throttle and everything looks to be perfectly perfect perfectly normal american thunder in the skies the altitude is too high for ejection seat use i love you your goal for srb step all

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i love you your goal for srb step all right they're cleared to get rid of the srbs two minutes four seconds standing by for srb step and confirmation high to use ejection seats but not even needing them there it is roger on the step columbia mark uh two minutes 20 seconds confirmed solid rocket booster sam both of them are gone and now they'll come down mark uh onboard guidance's converging this program colombia is now steering for its precise winner in space for main engine cutoff columbia now 39 nautical miles dude 42 nautical miles downrange mark two minutes uh 50 seconds you're looking a little hot all your calls will be a little early columbia has two engines around the island three minutes and that's over five thousand miles an hour already jules mark three minutes 15 seconds columbia now 51 nautical miles in altitude 66 nautical miles downrange velocity now reading 6500 feet per second marked three minutes 30 seconds columbia now 55 nautical miles altitude 78 nautical miles downrange marked 340 seconds standing by for a return status check and mission control by flight director neal hutchinson columbia

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30 seconds and if they uh they'll we're more than halfway now to the separation of the extra time is 56 seconds colombia's lofting early in the second stage is now being taken out of the trajectories program columbia now 74 nautical miles in altitude 181 north america man what a view what a view one america's

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but there's so much smoke from the solids you really can't see it until like 700 feet up tremendous plume for north solids little break up there you see it out heading out over the atlantic now the electrical uh the external tank will fall off will be separated somewhere between cape hatteras and bermuda it will be about 920 miles out over the atlantic this is an animation of course this is the actually the configuration they are flying very shortly after they took off they rolled over and went into that upside down position with the tail down you want to see the launch replay again while we wait for the uh for the separation of the external tank we still have another night for that let's see it again this time a little closer this is a replay now of the uh of the launch which took place just seven minutes and 30 seconds away wow she went and the shuttle has cleared the tower greg we're hearing confirmation that they could make it into orbit uh if only both engines if two of the three engines fail if two engines fail they can still go into orbit that's what pressed to me that's that's right they can they can achieve orbit with a two engine failure with it's just a single-engine

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with it's just a single-engine capability now they've gone far enough into the into the mission but there's every indication all three engines are working perfectly this is still a videotape replay that you're seeing that gives us a slightly different angle of the way they roared off into the heavens eight minutes and 15 seconds ago and i must say i i always thought that nothing could beat an apollo launch this this assemblage being of course so different in its appearance uh really was was utterly fantastic there you see on our map now the uh holding up right now to the point at which we are going to have the separation of the external tank and they've just been given the columbia gym they've just had miko engine shut down next event should be that uh external tank and they confirm set roger we confirm this oh that's great all right they're on their own now three seconds confirm external tank separation the critical thing moving below and beyond and translating the north of the external tank young should see it moving away out this winter they are gliding in flight now really we're not quite in orbit yet frank they've got to fire their uh their uh onboard uh orbiting maneuvering engines at this moment unpowered but it is going to uh they're going to fire the uh first of the orbital maneuvering systems give it a go home

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representation of where they are the two solid rocket boosters and the external tank is now separated they have their own power necessary to give them a little additional boost to put them up into orbit they will go into an orbit first of all that is sort of an eggshell orbit it will be 150 by 63 miles or so and then later on they will circularize that orbit at about 170 miles so they've done very very well indeed and so far this mission is really proceeding flawlessly let's listen and see if we can get the confirmation of that first day of the control center a burn of their own engines on board the uh the orbiter all the fuel west you're looking good burning over the hill we'll see at madrid right now roger i'm sorry i didn't get it i didn't understand what he said they're in their own burn at this point in time out of communications contact temporarily they'll pick them up again from the madrid tracking station and john said uh everything's looking good and i think he said they had about 40 seconds to go well that is the first firing the first firing in space of those engines on board that spacecraft another first that's in this mission because the orbit the nominal orbit left that where they were left with that mecca or main engine cut off was 13 by 81 miles long which is not nearly in the world with

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which is not nearly in the world with colombia through bermuda the next station to acquire will be madrid and that won't be very long now in the event by the way that uh they had to fly to uh to spain which was one of the alternate uh landing sites in case any difficulty developed it would have taken them only 37 minutes to get from here in cape canaveral to the rota air force base in spain they're not going there now they'll be picked up by the tracking station near madrid but as soon as we get here is houston in mission control where they're of course keeping a very close eye on it so everything has gone very well very well indeed now they lifted off in spectacular fashion everything hanging together quite literally and i think it might be useful now since we no longer can see them to uh see the liftoff from yet another angle we've got cameras scattered all over this place a good many of the masses some of the mars and we're going to see this videotape replay that took place just about 13 minutes ago first the three powerful engines are ignited it almost disappears doesn't it there steve rising right up out of all the papers solid rocket boosters roaring away spending all their energy and what energy it is in less than two minutes there you see the way it rolled over rolling over now into the upside down position the astronauts having a fantastic view of the earth tail down on the uh orbiter on columbia the rollover was executed perfectly the reason for that roll over frank yes jules the reason for that rollover is twofold and one uh so their radio antennas can be heard back at launch control the tremendous body of the external tank blocks it otherwise

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blocks it otherwise and two so they can see the external tanks separate uh the external tank by the way all right you want to do an h5 i'm going to mold the accessory the empty launch pad now this is at the scene in uh launch control here in the cape uh kennedy or the kennedy space center i should say i guess and now the preparations they get underway to clean up the mess left behind they're out of site they'll be picked up next by the tracking station in spain we are still awaiting confirmation really that they have gone into orbit have we got it that we got the confirmation gene did you hear that no no uh frank i i don't think we've got them back in communications contact quite yet i haven't heard anything to that effect but we'll certainly know as soon as we get them because their own burns should be complete at that point in time but it was going so well that even they had completed enough of it that even if they didn't get a chance to complete it all i think they would have an opportunity to raise their orbit uh at the higher point or the apogee of their maneuver which is about halfway around the world on this orbit so i feel pretty confident at this time it sounds good frank certainly does the second arms burn gets them up to 130 by 130 nautical miles of circular orbit uh what's unusual about this vehicle is that uh the external when the external tank burns out 15 minutes 30 seconds flight dynamics officer jay green uh reports the olms one burn was normal time of ignition at 10 minutes uh 37 seconds measure elapsed time delta v 164.7 feet per second duration of the burn one minute 27 seconds resulting orbit apogee 132 nautical pounds perigee 57 nautical miles so colombia is now in

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57 nautical miles so colombia is now in orbit not yet her desirable orbit at the start of olms one columbia was about 400 feet below 150 feet in front and 350 feet north of the external tank also columbia weighed four and a half million pounds at launch she now weighs about 214 000 pounds at 16 minutes mr last time this is

shuttle control houston frank yes uh their orbit now so that everybody understands they are in a a very elliptical orbit they are climbing very rapidly to the 130 mile point on their orbit uh at that point they will put some more energy into their orbit to bring the low point which will occur over florida here uh the second one yeah with their second ohms burn they'll bring that low point which normally would occur over florida up to a higher altitude i believe around 130 miles so that they're circular should they not do that second ohms burn they would be desperately close coming down from that 130 miles over the united states desperately close to actually uh re-entering because of the thickness of the atmosphere up around 57 miles so second homes burn is very critical they are in orbit they must get some energy into the orbit about halfway around the world when they get to 130 miles above the earth so that they can bring the other half of the of the oval if you will uh the part that at the low point that occurs over the united states up to 130 miles then they'll be circular later on they go up to 150 miles this next burn is something we want to watch for and that will be in about 20 minutes gene do you think i think it's about 44 minutes elapsed time um into the mission now and all the signs and indications are good that everything is going very well indeed it was a spectacular launch everything separated just on time they are in orbit

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separated just on time they are in orbit and uh they will uh you know about 30 minutes or so once again i beg your pardon we're 26 minutes away from the second homeless bird 26 minutes away when they will circularize their orbit and get into a more desirable orbit but they are in orbit right now we'll have uh more of course on the flight of columbia our coverage of space shuttle columbia will continue in a moment we're saying the second alms burn will get us up to 1 30 by 130 circular they have not yet done it it's still another 10 or 15 away from there doing it right yeah he was reading uh what the results on his computer what the results of putting that energy into the orbit will be and it and at the time they make it it will circulate to 130 by 130. one of the peculiarities about little flight is when you put in energy on one on one side of the world you don't see it until you get to the other side you put the energy in over the indian ocean and you will see the rise in the orbit over the united states just that's the mechanics of orbital mechanics you fire your engines at perigee to achieve a higher apogee yeah fire you fire them at one side of the orbit to change the other side the same thing when they come in they will they will uh retrofire on one side of the orbit we'll begin to see it decay on the other side on the other side of the world they were all very busy first as they took off with many things to do but uh we have a comment from uh bob crippens making of course his first flight space about five minutes after liftoff you were he and john young were 86 miles away from earth and he said what a feeling and what a view and i guess only someone has been in space knows what kind of a feeling it is and what kind of a view that you can do from there the uh burn that we keep talking about is the one that is going to circularize their orbit and put them in a much more desirable uh path around the earth and steve shepard has prepared a report to tell you just precisely what an olms burn really is uh uh supposed to do and what works here's steve the two orbital maneuvering

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here's steve the two orbital maneuvering engines are located in separate pods which rest on either side of the columbia's aft fuselage these engines hide the thrust necessary to insert the columbia in the final orbit the halter the bit as required and the slow columbia down for re-entry into the earth's atmosphere each engine provides about six thousand pounds of thrust only about an eighth as much power as an engine on a 747 they can be reused on at least 100 shuttle missions and they make the shuttle a working base vehicle a man machine that can maneuver with limits where it wants to steve shepard abc news and there is the empty launch tower here at uh cape kennedy where preparations are being made now uh for uh getting it ready for the next launch of another shuttle actually columbia be back here before too long they'll be landing naturally edwards air force base if all goes well two days from now tuesday afternoon let's have another look now at a replay of the launch site at the launch when it took place some 20 minutes and 38 seconds ago just at the incident water came down and then the huge engines just disappeared in that tremendous cloud of smoke frank i i think you can so quickly rose past that tower in comparison with the past launches as we anticipated it's a stuff i'll really appreciate when you watch it on television because you have budget within the parameters really of the television set and but that smoke and flame just seems to shoot out from almost horizon the horizon you know it appears to be riding smoothly but actually gene they they got bounced around a bit didn't they oh i i think uh solid rockets uh frank they got a rougher ride than we got on the first each of the big saturn five uh those solid rockets apparently are pretty rough riding inches we'll know

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pretty rough riding inches we'll know better of course when we get a chance to talk to john and bob but i'm sure it also smooth out quite a bit once they jettison solids and we're on the main engines of the shuttle the liquid rocket ends gina was like the simulators i flew uh the pogo effect jerks you up and down uh the height oscillation five cycles per second and giving you a g load of three or four times our weight uh as we sit here with each uh move frank if the camera can show it yes there's some of the smoke from the launch that's formed into a cloud uh just to the uh west of the heart launch pad uh still there sure that smoke that smoke is me scrambling to get bored when you wouldn't let me jules what do you mean you is gonna get on board i'll beat you to the pad any day of the week i'll tell you i i think i like a lot of other people were there with them either if not but certainly in spirit and when bob said something up the view of the earth it's something it's almost a selfish feeling not to let 220 million americans have same feeling in that same view tell us about it gene what is the view you you've it well you're coming on your back which might sound a little funny to most people but there's reasons for that as we just earlier but the first thing that bob saw was sundry flint off the atlantic ocean very brightly and then very shortly thereafter he could pick up something which is a coastline of africa and next he knows he's seeing he's seeing a cross across the coastlines and and not just across rivers and valleys he's looking across countries and the thing you'll hear the thing you'll hear him comment on i think before long in this mission is his feeling of what a sunrise looks like when he goes into darkness of course the sunset occurs behind him he won't see that but when he comes into daylight from darkness which will be out over the pacific he'll see one of the most gorgeous sunrises the sun rises that is characterized by first a pale light and then you see large bands of shades of blue commencing and

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bands of shades of blue commencing and then those blue bands are sort of moved forward over the earth's curvature and there's a big golden band that appears under it and almost instantaneously the sun comes up and all these colors mix together and then you're in daylight it it happens quickly it's it's unbelievably emotionally beautiful and bob i know we'll be looking for that you have to take time out on these flights there's a lot to do it's a particular origin mission these guys are test pilots they got a job to do you got to stop i'll take time out every once in a while to think about where you are and what's going on well you you can't avoid that eugene i mean you know you might have a lot of things to do instead of pushing switches to switch how can you possibly forget for a second really well these guys how lucky you are lucky privilege should be in darkness at this time and there they are roger columbia oh here we go here we go [Applause] hey alex roger and i have your own pad for your when you're ready to copy over ethiopia right now what they're doing is giving them the updated information based upon the radar tracking of their orbit which might change the energy they put in uh at the corner of the orbit just slightly cross feed all right they're going to exchange highly technical information back and forth for a time between uh mission control in houston and colombia which is now over the coast of africa uh heading uh probably at this moment over the indian ocean they moved once they got going and it was a spectacular launch our coverage of space shuttle columbia will continue in a moment like state burgers of course it was planned to land in the indian ocean far from any population centers and the same is true of the srbs we were talking a moment about the heartbeat of the astronauts no matter how experienced

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astronauts no matter how experienced they are or how cool and calm and collected the launch must necessarily increase their heart rate and gene cernan you might be interested to hear that the space rookie bob crippen's heart rate went to 130 at liftoff but the old vet john young going up for the fifth time a relatively stable 85 to 90. well i'm not surprised frank uh i can i can feel john crippen's uh bob crippen's excitement uh throughout this the launch thus far all his words on orbit uh talking about uh as max said how beautiful it is john's been telling me but he just he didn't tell it all and you can see and feel the excitement and of course john uh i guarantee there's a little apprehension but john's been there before and john's a very cool customer and you know that's why he's flying his fifth mission that's why he's commander of the first shuttle flight because he responds to situation no matter what she does distress and he's he's flying too uh even though he's had experience in space he is flying a an entirely new vehicle and so naturally as you say there should be some apprehensions i'm concerned about it frank now let's yes go ahead gene well i was just going to say one thing we might just want to uh mention here now although this this shuttle to most of us looked an airplane effectively it's in it's in space now and there's uh there's no air up there so all these wings and all these control surfaces that it will use for landing as an airplane does when it's flying all the time across country are ineffective right now they're shut down totally and they have very much like apollo little little jets little rocket jets both in a nose and a tail all over this aircraft i think there's over 40 of them which actually maneuver the airplane around and it's free to maneuver in all directions unlike an airplane it can go up and down and left and right spacecraft well it's a spacecraft now so we tend to look at it as an airplane but it is moving simply and distinctly like the apollo spacecraft did with little rocket impulses which move it around in orbit eugene the the orbital

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eugene the the orbital shuttle is now over the indian ocean heading toward the coast of australia there you see we are less than an hour away from off here already they have traversed gone across the atlantic uh gone across the coast the entire continent of africa and they are now coming up uh on the coast of australia over there in the still in earth's orbit the second orbit when uh they uh are about one hour and 35 minutes or so into the flight is one we expect to have the first television from the spacecraft when they will have the first opening and closing of the cargo bay doors as hugh downs explained that is a very critical uh function of this spacecraft because of all the heat that is built up on board systems and they have to ventilate all that heat and say they do that simply by opening the cargo bay doors the astronauts themselves are not of course exposed to open space but the cargo bay doors with the radiators there just bent all that heat and allow the ship to be cooled also of course it will as it moves through uh space and uh remains in orbit returning from time to time with the tremendous temperature differences 250 degrees below zero 250 degrees above zero so they they will be moving around quite a bit and as gene explained with those reaction control system uh engines on board that will enable them to keep adjusting and keep the uh the spacecraft at the proper temperature well there is the beautiful serene of earth the astronauts are looking down now on the indian ocean less than an hour after they left this uh after they left this launch pad 39 here 39a here at the kennedy space center in florida the rest of the world very interested in what's taking place up above the earth today as two american astronauts go into space to join two soviet cosmonauts who are up there now in their base station we're going to call in our correspondent peter jennings our chief correspondent in london good morning peter or good afternoon i

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good morning peter or good afternoon i should say good afternoon frank in our case and again good morning to you well what's europe's reaction how do they feel when europe's reacted detected on a lot of levels frank there's been a tremendous interest here there's a tremendously high interest on friday and great disappointment uh when colombia didn't get off on friday i think in some ways more interest today because there's a lot of attention being to the fact that this is the 20th anniversary exactly of the first manned space flight when yuri gagarin went around one orbit in 89 minutes a completely different approach to the 54 and a half hours they're going to spend a particularist in europe for about next hour because uh during this first orbit of course as you have pointed out uh in that first orbit they can still land at joint u.s nate base in rota in spain on the gulf of cadiz but as the basis of everything you've been saying to us there doesn't look to be much need for that a general reaction operates on a lot of levels i was interested to hear the lady talking to rebecca chase and titusville go america go because a lot of people overseas particularly among american allies have thought that america's had a lot of backs and that this was a shot in the arm that the country really needed and so people will be very pleased about that some people are very concerned overseas about the military dimension of travel in the next five years um a lot of attention being paid for example in the british press today that the u.s defense department has booked much of the shuttle space in the next five years i was thinking listening to you at the cape this morning that i was there in your chair for apollo soyuz um that massive effort of cooperation between the us and the soviet union and of course it seems to be a somewhat more sinister period in travel of which people overseas have taken considerable note particularly as the viets have recently uh tested a killer satellite but in general today it was a tremendously exciting launch scene live in all the countries of western europe and for them there is of that very immediate interest in the first orbit yes thank you very much peter i remember that apollo soyuz mission and of course it was uh there was a different internet oh

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there was a different internet oh approximately uh the major event in orbit will take place uh when the astronauts activate everything and open and close the payload doors now that is a very important function of this operation because obviously they're going to carry cargo up there and at times launch satellites and telescopes and so forth they've got to be able to open and close those doors that's what it's supposed to be it's a different truck really for uh space steve shepard has more on the the importance of this operation the opening and closing of the doors steve [Music] cargo bay doors down the back of the orbiter columbia are a surprisingly complex and critical part of the shuttle spacecraft they aren't the kind of doors you find on the side of a boxcar for one thing they are very large each of the two doors is 60 feet long 6.7 feet wide and weighs as much as two compact car they are made not of titanium or some other exotical but of a graphite epoxy material a sort of sophisticated plastic which is both lighter and stronger than metal attached to the inside of the doors are four giant radiators when this reaches orbit the door open to expose the aviators so they can vent off heat into space so much heats up inside the shuttle during launch and from the electronics on board but the doors must be open and the radiators are closed or the shuttle will have to be brought down by its fifth orbit conversely that'll cannot be landed unless the doors are closed the doors are operated by an automatic system commanded by the spacecraft's computers but should the automatic system fail they can also be opened and closed by hand the astronauts train for this contingency underwater which simulates weightless state in space astronaut crippen would have to don a spacesuit and enter the unpressurized cargo bay at the bay's aft wall he would attach a kind of large socket wrench to an exposed fitting and crank the door opener shut using muscle power if it were necessary he could also inspect the door by traversing the inside of the cargo bay or by moving along the outside surfaces of the doors which equipped with handholds in principle doors would not seem an

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principle doors would not seem an especially sophisticated part of a spacecraft on the space shuttle they are well that would be a very complicated procedure to attempt to manually uh close the doors or repair any of the faulty mechanisms there it would involve of course putting on the spacesuit and uh depressurizing the cabin for several hours so that both astronauts would be positioned to uh to actually carry out the eda the uh that outside activity and they don't anticipate that happening and certainly don't want it to happen but actually have to be prepared now that's going to take place not the eva but the opening and closing of the doors in about uh i would say 25 or 30 minutes and that is when we expect to have the first television pictures too from the orbiter which now crossed the attic it has crossed africa it has crossed uh the indian ocean and as you see it is swinging beneath australia and moving out across the barrier reef and into the blue blue pacific heading for heading in a way uh back to the across the united states well our coverage of the flight of columbia will continue after this message and a word from our local stations starboard door is open uh on columbia we're at one hour 33 minutes mission last time standing by for the television transmission they're doing this over the united states so they get the maximum coverage we've got the whole communications and then of course video coverage television covers from the time they hit california until the time they cross out over bermuda which certainly gives us an advantage in

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which certainly gives us an advantage in uh in monitoring those doors and should they have any problems with it of course mission control can uh anticipate the solution to those problems well the starboard bay door is open now that's been confirmed the starboard door that's a right-hand door uh if you're facing forward on the shuttle spacecraft and it opens quite wide it opens like a big clam shell it just uh doesn't open a 90 degree angle i don't know exactly the full swing of that door but it it opens so that when you take payloads out or put them in the doors are almost completely laying open against the side the fuselage of the shuttle i i really hope we get a good view of that i anticipate a uh a good picture here very shortly and that's important too because of the cooling requirements of the spacecraft extremely important at this time the radiators are used for cooling and they are the primary source of of cooling all the equipment the electronic equipment and of course keeping the the atmosphere in which the crew is working in cool so it is essential now i do have one door open which means i have partial cooling because i believe we have radiators on both right on both panels there are four doors though but in order to get uh in order to complete the mission successfully of course the they've also got to be able not only to open the doors but to close them again but we had for closure of the starboard they're talking about closing the starboard door that's the store on this right hand side you can see how far it actually swings open to get it completely out of the way and off bob crippen had to go out there and uh and work these latches that are located in here it would certainly not be an easy task but i think we've proven in the past that we have the ability to work outside the spacecraft certainly the repair on skyline what about uh sure that what we can do when we have today is now closed okay we now have the door

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we may be looking at the top of the doors we'll have to decipher this picture in a moment well it looks more like an x-ray than anything else doesn't it at this point i don't think we've got it right now well anyway gene with your demonstration they've got the starboard door opened and closed already okay they've got it i'll be using those pictures looking good [Music] okay you get a they get a note of a little excitement in the crew because once they can open and close those doors i think they feel that that that their mission is is a success at that point in time some other experiments and operational tests around but basically when they get this done they have proved that there is a capability under the seat of that that spacecraft they're flying that's a yeah notice the things floating around in the weightlessness there gene can you see it's not a picture that is very clear to uh to many of us possibly to the technicians and the scientists they're in houston they can recognize everything well i'm i'm really searching for some movement hoping i would like to verify that the dfi is in high sample hoping that we can see that uh that other door open i believe this television camera as we're showing here is inside the cargo bay which of course would be a contained uh closed compartment uh which is in zero gravity certainly what they're doing is verifying now in mission control via via telemetry that those latches have indeed closed uh and that will prove prove out the operation of that one single door you can see the uh interior wall there of the cargo bay

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of the cargo bay up in the right-hand side of the picture give you an idea of the dimensions of it it's quite big well remember inside the cargo bay you can carry something we'd like to verify that the dfi is in high sample please you can carry something equivalent in size to two large big passenger buses well there's going to be a space lab in there there will be a space lab in there too yes there is there's a joint a joint european uh united states space laboratory that will be carried up on one of the later flights with european uh crew members uh manning that laboratory and that laboratory will fit inside that cargo bay door inside the cargo bay it covers the bulk of the fuselage or the body of the uh of the columbia shuttle spacecraft and there will be plenty of opportunity for others to take part in the uh space operations really they have the getaway specials for what as little as three thousand dollars people can put tiny canisters telescope payload being developed there's also payloads which will have their own uh rocket engine which will propel them to to orbits much further out than the shuttle can actually carry them itself the telescope is really going to be a fantastic thing isn't it that goes up in 1985 is it it's not too far away frank and that will be well people say that that's just going to make the telescopes that we have on earth appear like uh you know like like these little binoculars that i've tried to watch no yeah at all in the door when i opened up the fortnite book is uh it made me found stuff happening and uh doors opened up nice and smooth came

[00:52:00 (https://www.youtube.com/watch?v=MjNWwy99Lss&t=3120s)](https://www.youtube.com/watch?v=MjNWwy99Lss&t=3120s)

uh doors opened up nice and smooth came back it looked like that was coming through my position we again unlatching the doors uh going down the center line now roger we copied the first part of that then we went into a handover but we copied that everything was right down the pike on the clothing bob crippen was describing a man in which the door opened and as i observed everything was extremely nominal this camera i believe is pointed right at the center line of the uh of the cargo bay on the interior side and if that is uh is the case we ought to see first movement uh at that point when houston uh all of the uh shutter line latches are released now okay i think we can look for some movement very shortly on that other door we'd like the dfi to stop until we figure out what the problem is on that dfi uh recorder we'd like it to stop until we figure out what the problem is okay we're done thank you what is this now gene you mentioned it yes remember when these cargo bay doors open and uh we can see out in the space we'll actually be looking back down into into earth because the spacecraft remember is upside down in orbit the camera when this door opens uh we might very well see a picture of ourselves as it goes over this part of florida that would be in itself a spectacular camera gene one facing aft and one facing forward should we should get a spectacular view of the earth these are generally slow and methodical uh processes because of the seriousness of

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processes because of the seriousness of the nature of examining the opening and closing of the latches something so critical to the shuttle operation itself and that that is why it is taking so long that is why we plan something like this to occur over the long period of communications passes over the united states yes and they are over this country now and columbia used one more confirmation on that we'd like to confirm that the dfi pcm is the one that you turned off standby one the pcm recorder isn't stopped at the front of the damper recorder these doors are obviously very heavy but here again in zero gravity remember these doors have no weight constraints working against them as they would if they were sitting here on earth there are sort of free swinging doors it takes a lot less less energy or power to move those doors houston at one hour 43 minutes of mission last time we lost our television transmission as we've uh passed out of uh milo's station range and we're under acquisition now through bermuda however we will pick up uh television again on the madrid pass and uh a little less than 10 minutes so they've gone across the united states well gene we're not going to be able to uh have a look at uh at least the united states on this particular pass are we no i don't think we're gonna the main thing was to monitor and i'm sure the ground recorded the television that they were able to receive of uh of these doors opening and closing well did we get confirmation that the other door opened and closed no i just i heard him say that they got the center line latches unlatched again after they confirmed we were closed on the tv and for that recorder we'd like you to pull a circuit breaker to

[00:56:02 (https://www.youtube.com/watch?v=MjNWwy99Lss&t=3362s)](https://www.youtube.com/watch?v=MjNWwy99Lss&t=3362s)

like you to pull a circuit breaker to see if we can get that thing stopped and that's on panel r11 it's the forward container recorder main c circuit breaker on row g okay thank you frank uh i i must correct an error uh i guess a veteran in space flight has a right to make a mistake too uh these gentlemen launched in a direction or an angle to the north of east as a result as their world rotates of course they will pass in half past to the to the north of us i i keep thinking parochially perhaps on apollo 17 we launched to the south and uh as a result we passed south of here on our second pass so if you forgive me for that mistake yes we'll forgive you that mistake all right thank you well actually they went over uh texas didn't they texas and on up towards uh washington uh in the uh eastern seaboard that's right and they will continue to move further north over the united states to uh to their maximum northern angle i believe of about 40 to 44 degrees latitude and they will cover the 44 degrees north and 44 degrees south which gives them a major segment of the populace of the entire world i keep i kid you oh i was just going to say i keep thinking about their flight and looking at this vehicle and holding it it sure does make sort of make your home sick well i i tell you what i'm really looking forward to now i mean since they've got one set of doors open you like to believe that they're probably going to be able to get the others opened and closed well the landing is really going to be something to see into well the the major step obviously once we it looks like the vehicle is performing on orbit the fuel cell seem to be performing well we've used fuel cells before if we get these doors shuttle control houston at 1 hour 46 minutes mission elapsed time less than a minute away now from uh loss of signal uh through bermuda

[00:58:01 (https://www.youtube.com/watch?v=MjNWwy99Lss&t=3481s)](https://www.youtube.com/watch?v=MjNWwy99Lss&t=3481s)

uh loss of signal uh through bermuda in columbia houston about 30 seconds from los angeles 53 minutes the recorder being discussed on this pass is a real-time development flight instrumentation that will be used you see where the astronauts are now swinging out over the atlantic once again the second time around they launched considerably south of where they are now from here at the kennedy space center in florida and they've now swung up over the northeastern united states and are heading northward back out across the atlantic for the second time we expect to uh to hear more on the television transmission in the next several minutes we did note that uh there there are contingency plans if they have difficulty opening and closing the doors but those plans are a bit cumbersome and they would obviously prefer not to have to put them into effect but bob crippen talked about them before the mission and explain just what is involved if things go wrong with the opening and closing of the doors here's what he said we have to have the cooling effect of the radiators which are on the inside of the doors if we plan to stay up overnight we part opening the doors the spacecraft is cooled by just like your body is cool we use evaporation of water that is uh flashed out in the vacuum over the cooling lines and we only carry enough water to last us enough for one day without doing an extensive power down it is possible if for some reason we ran into a problem couldn't get the doors open and we had another reason we did not want to go ahead and de-orbit because of some other kind of a systems problem we could probably do an extensive power down of the spacecraft to keep it from filling up so much heat thereby it wouldn't use as much water and to last on the next day yes that was bob crippen in a an interview recorded some time ago in which he described how

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some time ago in which he described how important it is actually to open and close the doors and uh the difficulties involved in the uh eastern part of the country and probably a good many people missed it i wouldn't mind seeing it again if you gentlemen can wamp it up for us we're going to see some live television uh we believe again very shortly in a few minutes as uh the astronauts are able to transmit signals to us let's let's see the replay of the launch which took place less than two hours ago if you missed it you really missed something here it goes and those tremendous engines light up and there she goes frank there again we see where it didn't stay on the pad very long as soon as those solid engines uh lit off it uh as we described before just sort of leaped into space solids with the extra kick gene to get it off the pad in a hurry the extra thrust it's got a greater thrust over a weight than the apollo uh spacecraft had which gives it that extra kick in fact cryptically when i did the interview by the way which you showed an indigo uh i asked what were the how would he define a successful flight and he said up uh getting up safely open the doors and get it down safely even only lasted half a day they would consider that a success they would have proven the vehicle could take off accomplish its main objective opening doors to drop off cargo and land safely jules we're going to have a quick look at it again as it takes off this time from a somewhat more distant angle you can see the uh america's first space shuttle member from it and look at it it looks like a statue going up doesn't it it surely does it's just a perfect plume coming out of those uh rocket engines you can see the road there too those solids uh those solid rockets that

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those solids uh those solid rockets that are attached to the sides uh are i believe somewhere around 12 feet each in diameter the biggest solids ever built yes they are and they are 12 feet and the solids are uh considerably longer uh than either the external tank or the spacecraft itself there's some 180 feet long it's just too bad that that everyone couldn't have been here today although i will admit it was very crowded but uh it is a a spectacular thing to to view and be part of in person uh frank i think you felt like we did here about 30 seconds uh before the launch the atmosphere you can feel some kind of electricity uh in the air out here no matter whether you're two three or five okay i believe we're looking at that one door that is actually leaning open that port door must be open at this point shuttle control justin we show both payload bay doors open it has to be it has to be uh few pile missing off of both of them off of the starboard pod it looks very well that they may now have maneuvered into an attitude nose up so that they're actually looking the background could very well be the blackness of space triangles we're looking after i believe those hunts you see are the humps of the ohm's maneuvering engines and we saw the tail

[01:04:00 (https://www.youtube.com/watch?v=MjNWwy99Lss&t=3840s)](https://www.youtube.com/watch?v=MjNWwy99Lss&t=3840s)

maneuvering engines and we saw the tail or the vertical stabilizer the rudder if you will uh just a moment ago we're looking aft i believe at this point that's the camera right those are tiles indeed and we're looking the camera is looking at looking the camera's showing us this picture is in the rear of the fuselage and it is showing us the exterior of the fuselage in the blackness of space and they must and are there missing tiles they must have turned the vehicle right side up frank jane can you detect that roger there now we see that i believe that there's the vertical fin there's the tail so we're looking aft and that's that's uh was correct we were looking at the ohms engines the aft section or the bubbles that you saw on the back part of the fuselage gene did you detect or notice any missing tile no but i heard a reference to that these are the less critical areas of tile placement so the more critical heat absorbing areas are on the bottom side of the wing and the forward nose of the fuselage because that's where it bears the full brunt of the re-entry here see we are indeed the little circle you're seeing horizon the earth on top we are indeed upside down you're looking at the horizon of the earth on the top of the picture and the tail beyond the tail is a blackness of space so you indeed they indeed are upside down and you were looking at a curvature of the earth yeah actually i saw a cloud right here a little bit ago so their attitude is inverted uh as it was planned they didn't change that and if we come back to that sequence again uh i think you'll better be able to point it out report from john young showing a few of the missing towels uh also you reported columbia we're 30 seconds we'll be at the

[01:06:00 (https://www.youtube.com/watch?v=MjNWwy99Lss&t=3960s)](https://www.youtube.com/watch?v=MjNWwy99Lss&t=3960s)

and that is looking forward i'm sure that's looking forward from one of the afghans also reported that the tiles on the wing up here their wings appear to be intact i hold here in my hand a sample of the tile and somebody i think was young expressed concern about a missing tire now we were it was a tile looking back uh missing from the indian ocean station a tile from the af fuselage area which is gene said is less critical than the uh uh for the the heat super critical areas for re-entry are the tiles on the leading edges of the wing and the underside and the uh forward part of the nose well gene can they confirm that those tiles in the critical areas there on the spacecraft are still intact well they certainly can't see them visually and there's only a certain amount of telemetry i believe that looks at the tile system so indeed they can do it they cannot really determine whether any one of those more than 30 000 pieces of tile are gone except what they can see visually well if they if there had been uh you know as people said uh what did they call it the the zipper effect if one went off and uh then the the others uh followed well you need to say that they would not be able to know that so that we might we might actually come up to the point of re-entry i'm not sure whether we have the tiles too well frank frank that that would occur at the point of maximum aerodynamic pressure uh which is uh uh well within the scope of some of our tracking cameras and if you saw that kind of ripple effect with some of our high-powered cameras i feel certain we would have known that and would have seen that uh long before they ever got into orbit uh and none of that was reported none of that was seen was that their missing title this is the area where several tiles are missing uh gene and friends looks like they may very well be right on this uh section uh cowling

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uh section uh cowling engine calling if you will uh and that could well have uh reverberated off well you must understand when this vehicle re-enters the earth and it enters this way and and the fireball that it encounters as a friction of the earth slows it or friction in the atmosphere slows it down hits it in this section of the fuselage and under the wing and of course that fireball will wrap around the nose wrap around the wings now the bottom section and the and the leading edge of the wings and the leading edge of the nose are the most heat critical portions of this entire vehicle during reentry the tiles in the back section i can't tell you exactly but perhaps uh i have to accept uh less than a thousand degrees thousand to fifteen hundred degrees the temperature change well if they uh if they did uh come off and as obviously there are a few missing tiles that was caused probably during the early moments of launch wasn't it uh when they uh when they had the maximum vibration there john john reported uh on the main engine burn that there was uh it was a relatively smooth ride and there was no pogo they didn't say anything about the roughness of the ride on the solid rocket boosters nor did they say anything about going through the area of maximum pressure where where the thickness of the earth and the speed of the vehicle combined to make it the most rugged and difficult part to transfer through well i suppose in time we'll find out why why the tiles come off at that one particular point that really wasn't the point subjected to the most pressure but perhaps the vibration there vibrations back by the engines and i think probably rather an aerodynamic pressure tearing those off it could very well have been a vibration of the aft section of the of the spacecraft that all right gene uh we mentioned before the zipper effect where some people have advanced the theory or speculated about it that if one came off a they might all come off uh it seems unlikely because they are not attached one to another they're all put on separately but uh john young yes i'm sorry go ahead joe you disprove

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yes i'm sorry go ahead joe you disprove the zipper effect by the pattern of the two tiles or three tiles missing back here which we saw had there been a zipper effect there would have been a whole row of tiles missing well i think maybe we can uh pick up a remark made by john young who is certainly vitally interested in all this right at this moment uh we talked with him before the last and he talked about the possibility of some of the tiles coming loose and the so-called zipper effect let's play that uh tape for you now well if you don't have any tiles on the bottom the vehicle is going to burn up if you have a lot of tiles on the bottom the vehicle won't burn up where the tiles are and what the effect of them is is really a sort of an unknown thing you can lose the tile in a certain area a single tile and i don't think it'll do anything to you my personal opinion is i've heard people say there's going to be a zipper effect well there really isn't a zipper effect each one of those tiles is put on individually in their design four to five times the strength that they need for the dynamic pressure they're going to see well that's john young stating in a very succinct manner what could happen he says if you don't have any tiles on the bottom the vehicle is going to burn up and if you have a lot of tiles on the bottom the vehicle won't burn up mission control has now confirmed that the missing tiles pose no threat to the crew we saw only just a couple of them so we'll go for a report on that now to max robinson who is in mission control in houston max well frank pretty much what you're saying uh we have just gotten a report that those towns are not critical they would not interfere with this mission at all uh we are also told that after landing the only thing that would probably have to be done would be to replace the patch of skin under the tiles and that presumably would be a very minor job again the tiles that came off are not critical we don't have any idea about the underside the very critical area of the shuttle uh which is very critical critical on reentry when that plane enters the earth's atmosphere we don't know what the condition of the tiles uh happen to be at this point but there's no indication that any of those tiles are off at this point frank

[01:12:01 (https://www.youtube.com/watch?v=MjNWwy99Lss&t=4321s)](https://www.youtube.com/watch?v=MjNWwy99Lss&t=4321s)

tiles are off at this point frank well the tiles of course are very important because uh the shuttle is supposed to be reusable and that's why they've put on this permanent covering to enable it to come back down through the earth's atmosphere and subject itself to that tremendous heat and survive and then bring it back here to kennedy and get it ready and launch it again uh before of course all space missions concluded with the uh spacecraft coming back through uh the earth's atmosphere with an ablative material that uh just disintegrated and burned up in the earth's atmosphere but that was in the days when we were not attempting to make uh more than one use of the individual missions go ahead gene no it's jewel frank i guarantee you that rockwell engineers and uh nasa engineers are i've already begun work in heat tunnels trying to simulate the forces of dynamic q maximum pressure that is at liftoff to see whether any of the tiles did come off could come off might have come off the aft the forward nose area or the leading edge of the wings the critical areas for re-entry because as gene said as you now know there's no way to see or to remotely tell whether any tiles have come off these areas you can't look back from the cockpit to see the leading edge of the wing nor can you see or tell what's going on underneath here and even if there were a camera on a portable camera uh with a remote tether which is not by the way crippen would have to go out and do an eva to minutely dissectly surgically analyze how many of the 32 thousand tiles were missing the massive job the the tiles frank are indeed for two purposes to protect against the heat of reentry

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to protect against the heat of reentry but remember once this this space plane spacecraft this airplane returns back into the atmosphere it must fly like an airplane so indeed those tiles have to form a smooth aerodynamic boundary over the surface of the wing just like the smooth wing surfaces we stay on our airliners so indeed when they burn they have been planned and designed to burn evenly so that they do continue to form that smooth aerodynamic surface for the air to pass over as this this spacecraft glides back to earth and you know i think there is somewhat of a common misconception that a great many of these tiles that are on the spacecraft right now uh fell off during the uh the flight from uh california here whereas actually a good many of those uh those tiles that did fall off were not really the the ones that they intended to use on the uh on the spacecraft mission where they were they were cosmetic tiles right they were there just to provide some aerodynamics taking the place of the full tiles that weren't ready the thing that we should point out is that the full tiles are each individually computers contoured and shaped and manufactured and very large for example if this leading edge of the wing here is two or three feet thick uh i think you'll agree it has to be that thick gene the leading edge tiles uh are uh 0 6 8 10 inches high and aerodynamically shaped so if you lose one it's a big shock of uh aerodynamic laws let's see where they are right now do we have a map that can might be a good idea to locate the astronauts for you every now and then let's see our map and uh pinpoint their location they're uh they've already gone across the united states they've crossed the atlantic for the second time they've crossed morocco they are uh really right around the equator now here's the uh the launch once again we are going to continue with our coverage of the mission of

[01:16:00 (https://www.youtube.com/watch?v=MjNWwy99Lss&t=4560s)](https://www.youtube.com/watch?v=MjNWwy99Lss&t=4560s)

with our coverage of the mission of columbia the space shuttle after this from our local stations right on these ohms bubbles the one other thing that was very unique in that television picture the spacecraft was upside down and uh and while it was upside down at the top of that picture you could see the curvature of the earth you can see what the earth looks like from 130 miles and it is a definitive curvature at that point and it was just above the vertical stabilizer of the of the spacecraft and the spacecraft was indeed upside down well there is thermal uh thermal sensory equipment really on board though frank i believe that that and i don't know this for a fact but i i would tend to believe that there is monitoring equipment on board this spacecraft because the the spacecraft was designed to be relatively self-sufficient we talked about minimizing the use of controllers on the ground because of the onboard computers the entire concept of the development of the spacecraft was was to be as self-sufficient as possible certainly we always need and can use help from the ground so in determining problems solution of problems uh any malfunctions including uh tile losses i don't know specifically but i would be willing certainly to uh to guess that there is a capability to determine some tile losses in certain critical spots on board that spacecraft jules says there isn't and perhaps that's true young john young told me there wasn't all right i don't know opinions did what john young he said there was no way of telling well we understand there's a thermal uh sensory box that's experimental instrumentation in the cargo bay that's part of the dfi the developmental flight instrumentation which will not tell you if you're losing

01:18:00 (https://www.youtube.com/watch?v=MjNWwy99Lss&t=4680s)

which will not tell you if you're losing tiles uh on the underside or leading edge of the wing i haven't investigated it thoroughly but that's what young told me when i interview them because i've been deeply concerned about tile laws you can't be a newsman in this business and not be concerned about something that's quite critical well all right uh we'll come back to this a bit later on but let's go back down to mission control now and hugh downs who is in the uh cockpit uh simulator hugh yes frank uh gene cernan earlier mentioned the self-sufficiency that is on board one of the things i think as space flight gets more sophisticated it gets in a way more home-like you'll remember that the very early flights men had to remain in their pressurized space suits throughout by apollo they were by gemini they were taking off helmets and by apollo they were changing completely out of the of the spacesuit into a flight uniform here missions will make possible a shirt sleeves environment where people will change completely out of i mean they can dress uh i would imagine however they'd want they've gone to cotton now for for comfort really lightweight clothing there seem to be more more room and more rooms one might imagine that in the distant future as space flight gets more home like there could be a fireplace in one of the compartments certainly the amenities are here they have in effect a bathroom there there's a sleeping room dining eating in the in the deck immediately below us this is the cockpit area here incidentally the the flight information recorder which was stuck on is located just after the seat that's across from me that's a malfunction that is not going to put anyone in danger but apparently that i haven't heard whether that has been corrected or not i think there is an analogy in in aviation in the early days you had to have goggles a leather helmet a heavy jacket and now a man can dress as i'm dressed in a business suit and operate an airplane so space is going to get more and more home-like in that way and more uh frank yes thank you very much hugh that

01:20:01 (https://www.youtube.com/watch?v=MjNWwy99Lss&t=4801s)

frank yes thank you very much hugh that was interesting let's see where they are got a map uh that we can pop up here here we are they've already crossed they are over uh madagascar and out over the uh they're in the indian ocean as a matter of fact right now and they're a second orbit we expect to have television in 20 minutes or so as we regain uh communications capabilities with the astronauts uh hugh downs was talking about how the space travel is becoming somewhat more comfortable because they don't always have to wear those bulky space suits and of course the craft themselves are becoming somewhat uh somewhat more roomy although i think i saw somewhere where somebody described the interior of a shuttle uh as a filing cabinet uh gray or something or other in terms of comfort lynn sure however has done a spot that tells us more about the living conditions on board and here it is right now lynn when they're not controlling their craft up on the flight deck or working back in the cargo bay area the astronauts will spend their time just living behind me is the area where they'll do their eating and sleeping while they're in orbit it is not very big in here in fact nasa officials compare it to the inside of a volkswagen this is what you call a super efficiency space it is the astronauts living room bedroom dining room kitchen bathroom and even exercise room all rolled into one to start in the kitchen area this is the sink well it's not really a sink it's just a water dispenser and you can get chilled water or room temperature water no hot water on board one entire wall of the mid-deck area is covered with lockers very much like the lockers that you'd find in a bus station for instance now they contain all sorts of equipment and these two over on the far left contain all the kitchen equipment so this is actually the kitchen or the galley the top one contains all the food that the astronauts will be eating

01:22:01 (https://www.youtube.com/watch?v=MjNWwy99Lss&t=4921s)

the astronauts will be eating and it comes packaged one meal for one person in a little package like this and in this other locker right beneath it contains the equipment for warming the food now this is the warming unit and it works this way even though the meals come in those packages as we showed you when you take one of them for instance this one is asparagus and you add water to it or rehydrate it just slip it on here here's some corned beef slip that on here you can even do it with black coffee coffee with milk and sugar even cans this entire unit is electrically powered and it will take approximately 20 minutes for all this food to heat up now there's all kinds of foods the astronauts can eat they get everything from scrambled eggs to smoked turkey one thing they cannot have on board alcoholic beverages after the meal and for all other waste here's a locker just for trash there's even a locker up here which contains a medical kit for the astronauts and as you'll notice there are these little strips all along the locker wall these are strips of velcro and they are so that for example this is a box of tissues which also has a velcro strip so these things can be secured in outer space in their weightless condition there's even a locker that qualifies as a bedroom or rather it contains the bedroom right here in this second drawer is something that is called a sleeping restraint now a sleeping restraint is kind of a an outer space version of a sleeping bag and it works this way it is attached to the top and bottom of the lockers into these holes two pins fit right in then the astronaut unzips the bag crawls inside zips it back up and kind of hangs in there like a kangaroo on its mommy's pouch now since there's no gravity in outer space and there's no up and down it just doesn't matter that the astronaut is sleeping in a vertical position there is also a toilet in the mid-deck

[01:24:00 (https://www.youtube.com/watch?v=MjNWwy99Lss&t=5040s)](https://www.youtube.com/watch?v=MjNWwy99Lss&t=5040s)

there is also a toilet in the mid-deck area and in later flights they're going to make a curtain so you can curtain it all for privacy that will be a first for outer space after the first four test flights have been gone through some of this equipment will be changed for instance this electrical panel will be replaced by bunk beds for the astronauts but even when some of the equipment is removed and others brought in this mid-deck area will not get any larger and if you think it is cramped quarters for two right now wait until the space shuttle really gets going then this living space may have to accommodate up to seven astronauts at a time and they'll become very good friends if they're up there for a while thank you very much lynn very informative report now let's see what they are going to have to eat today we have the menu which i understand is going to be uh flashed on the screen here or at least is going to be given to me in my ear so that i can tell you what the astronauts are having there you are frankfurters turkey tetrazzini bananas almond crunch bar and an apple drink well they're probably hungry it's been quite a while since they had the steak and eggs we're going to go off the air now but we would like to remind you that we're going to have a special report at 11 30 eastern time on the progress of the flight of colombia and we'll also have a special issues and answers broadcast today at 12 noon eastern time that will be devoted to the subject of the space shuttle and there will be pro and con arguments made on that program so we think you'll find that very interesting also we're going to have a report later on this afternoon for another television transmission at about 4 20. so we'll keep you informed on the flight of columbia for max robinson for gene cernan jules bergman lyncher becky chase and all the others who have contributed to our coverage this morning my thanks and we'll see you later at 11 30 about two hours from now with another special report on columbia on her way to a successful space mission [Music] this has been the next giant step abc

[01:26:01 (https://www.youtube.com/watch?v=MjNWwy99Lss&t=5161s)](https://www.youtube.com/watch?v=MjNWwy99Lss&t=5161s)

this has been the next giant step abc news live coverage of the launch of the space shuttle columbia

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